

September 14, 1993 to Straub; U.S. Patent No. 3,865,939 issued February 11, 1975 to Jandacek et al.; U.S. Patent No. 3,085,939, issued April 16, 1963 to Wruble; U.S. Patent No. 5,502,045, issued March 26, 1996 to Miettinen; U.S. Patent No. 5,958,913, issued September 28, 1999 to Miettinen; and in co-pending P&G Application 8003P, filed March 27, 2000.

C. CHEESE FILLING

A preferred filling of the present invention is a cheese filling comprising from about 20% to about 60%, preferably from about 25% to about 40%, and most preferably from about 28% to about 33%, non-digestible lipid; and from about 0.5% to about 35%, preferably from about 1% to about 10%, and more preferably from about 5% to about 10% crystallizing lipid; and from about 20% to about 75%, preferably from about 40% to about 60%, and most preferably from about 45% to about 55%, dehydrated cheese powder; and from about 0% to about 55%, preferably from about 5% to about 20%, and most preferably from about 10% to about 15% bulking agent.

The preferred cheese filling is reduced in fat and has a low moisture content.

Dehydrated Cheese Powder

Any dehydrated cheese powder suitable for producing an instant cheese, such as those disclosed in U.S. Patent No. 5,935,633, issued August 10, 1999 to Derian, can be used to make the preferred cheese filling of the present invention. The dehydrated cheese powders generally have less than about 3.5% of moisture.

Dehydrated cheese powders which may be employed in the instant cheese compositions of the present invention include, but are not limited to, Anejo Enchilado Cheese Powder 73870, Monterey Jack Cheese Powder 9497, Mozzarella Zing Cheese Powder 9498, Swiss Zing Cheese Powder 9481, Cotija Cheese Powder 73401, Parmtang Cheese Powder 9335, Romano Tang Cheese Powder 9381, Sharpee for Baking Cheese Powder 9510, Panela Cheese Powder 73397, Hexagon Cheese Powder 9483, Cotija with Jalapeno Cheese Powder 73857 and Cuatro Queso Cheese Powder 73856. Especially preferred is Cheez Zing.

The cheese powders and numbers described above are the commercial names for cheese powders made by Kraft Food Ingredients, a division of Kraft Foods, Inc.

A single dehydrated cheese powder or a mixture of more than one cheese powder may be used as the dehydrated cheese powder in the cheese filling compositions of the present invention.

Bulking Agent

A bulking agent can be included in the cheese filling composition. Bulking agents typically add body or texture to the filling and can be non-nutritive or low calorie materials. Suitable bulking agents include hydrolyzed starch (e.g., corn syrup solids or maltodextrin), dextrose, polydextrose, mono- and disaccharides, starches (e.g., corn,

potato, tapioca wheat), as well as mixtures thereof. Corn syrup solids, polydextrose (such as that available from Pfizer Chemicals) and maltodextrin are preferred bulking agents. Sugar substitutes which function like sugars but which are non-nutritive can also be used. Such sugar substitutes include the 5-C-hydroxyalkylaldohexoses described in U.S. Pat.

5 No. 5,041,541, issued August 20, 1991 to Mazur.

The preferred bulking agent is hydrolyzed starch. The preferred hydrolyzed starches include maltodextrins and corn syrup solids. The preferred hydrolyzed starches have Dextrose Equivalent (D.E.) values of from about 5 to about 30, preferably from about 10 to about 20. Maltrin™ M050, M100, M150, M180, M200, and M250 (available from
10 Grain Processing Corporation, Iowa) are preferred maltodextrins. The D.E. value is a measure of the reducing equivalence of the hydrolyzed starch referenced to dextrose and is expressed as a percentage (on a dry basis). The higher the D.E. value, the higher the dextrose equivalence of the starch.

15 Process for Making Cheese Filling

The dry ingredients are first blended in a suitable mixer, such as a ribbon blender. The non-digestible lipid and the crystallizing lipid are both melted (together or separately) and then are combined with the dry ingredients. Mixing is continued until the lipid is homogeneously blended with the dry ingredients.

20 D. SUBSTRATE

Although the present invention is generally described herein in terms of a lipid-based filling suitable for use in combination with a substrate, it should be understood that the lipid-based filling can also be used as a stand-alone food item. For example, the lipid-based filling can be consumed without being employed as part of another food item. It is fully contemplated that the lipid-based filling can be separately packaged for later
25 consumption or use, such as in a pressurized container, a bowl, a tub, a jar, or any other suitable container. Furthermore, the lipid-based filling can be used for any other appropriate uses such as a topping or a spread. For instance, it can be spread on a cracker or toast points and used as an hors d'oeuvre.

The filling of the present invention can be utilized with any suitable substrate. For example, the fillings of this invention can be employed in a variety of food products, including bakery, dessert, snack, candy, dairy, nut, meat, egg, and vegetable products. The fillings are especially adapted to all types of bakery products including leavened baked
35 products, both yeast raised and chemically leavened, and unleavened baked products. Bakery products include cakes, breads, rolls, pastries, cookies, biscuits, and savory crackers. Other suitable food products include jelly rolls, pirouettes, wafers, and hollow snack foods. For example, the filling of the present invention can be used in snack foods such as tortilla sandwiches or potato crisp sandwiches, comprising two chips which
40 sandwich a filling.

Preferred substrates for use herein include base cakes such as crackers, cookies, and biscuits; these can be used with the filling of the present invention to form sandwich biscuits. (As used herein, the term "sandwich biscuits" is broad enough to include sandwich cookies, sandwich crackers, and the like.) Any suitable base cake can be used for making the sandwich biscuits of the present invention. Preferably, the base cake is prepared using non-digestible fat and is low in fat and calories.

The preparation of a preferred sandwich biscuit is described below.

E. SANDWICH BISCUIT

For sandwich biscuits, the fillings are formulated, mixed, and optionally aerated before applying to the shell or basecake by stencilling, depositing, extruding, or other means known to the skilled artisan. The basecake and filler combination is then capped with another basecake.

The filling is applied at a temperature of from about 50°F to about 160°F, preferably from about 70°F to about 125°F. If the filling is too warm, it will be thin and will flow out of the sandwich when the top base cake is applied. If it is too cool, the crystallizing lipid may already be crystallized and adhesion will not occur. The exact temperature range used depends on the crystallizing lipid being used. The higher melting the fat, the warmer the application will have to be.

The filling should be applied quickly after mixing (i.e. up to 4 hours, preferably less than 2 hours, most preferably less than 1 hour) unless it can be kept above the complete melt point of the crystallizing lipid. Waiting too long at a temperature below the complete melt point will allow the fat to begin to crystallize and reduce the adhesive properties.

F. PHYSICAL PROPERTIES

The fillings and filled products of this invention exhibit a number of desirable characteristics. The fillings of this invention exhibit good adherence, holding the top and bottom basecakes together well. Misalignment and decapping in the production of biscuit sandwiches can be minimized by using the fillings of this invention without resorting to extra bonding layers or special pressure and/or cooling equipment.

When subjected to the Vibration Test (described in the analytical methods section herein), separation of the sandwich biscuits is less than about 20%, preferably less than about 10%, and more preferably less than about 5%.

G. ALTERNATE EMBODIMENT

Although not as preferred, in an alternate embodiment, the reduced fat, low moisture, lipid-based filling comprises:

- (a) at least 20% lipid, wherein said lipid comprises:
 - (1) from about 20% to about 100% non-digestible lipid; and
 - (2) from about 0% to about 80% digestible lipid; and